REMARKS

This is in response to the Official Action mailed May 8, 2003.

In accordance with the Examiner's recommendations, the specification has been amended on page 1 to add data regarding a related application, and on page 8 to correct a typographical error. The abstract has been replaced to comply with MPEP § 608.01(b).

Figs. 1-3 have been amended by adding the legend "Prior Art" as requested by the Examiner.

Claims 1-18 are now presented for the Examiner's consideration in view of the following remarks:

The Present Application

The present application is directed to a system and method for mapping a network having multiple local area networks (LANs) connected by an ATM-based wide area network (WAN). Specifically, the application discloses and claims a method, computer program product and apparatus for identifying a connection between local and destination LANs through an ATM-based WAN.

The technique makes use of information gleaned from several sources. Routers in the LANs are examined for ATM interfaces. When those interfaces are identified, an IP address, a subnet mask, a city, a state and a virtual circuit identifier are retrieved and stored, making a list of entries.

Pairs of IP addresses may then be identified. That is done by using the IP address and subnet mask for each ATM interface in the list to derive a destination IP address. For each pair

of IP addresses, a virtual circuit identifier value may then be identified. WAN configuration data is then retrieved and prepared to permit WAN to LAN correlation.

The city, state and pair of virtual circuit identifier values of ATM interfaces on the LANs are compared to similar characteristics on the WAN. Associated configuration information and components of the WAN may then be correlated with the list of ATM interfaces.

The technique described and claimed in the present invention permits an ATM-based network operator to provide particular connection information to operators of virtual LANs that use the ATM-based network. The operators of such LANs otherwise have no way to troubleshoot connections between remote LANs that are connected through the ATM-based network. The technique takes advantage of information that may be gleaned from LAN edge routers as well as information that is available from network management systems (NMSs) within the WAN.

Independent claims 1, 7 and 13 are directed to a method, a computer program product and an apparatus, respectively, for performing the described technique.

The Examiner has rejected all claims in the present application under 35 U.S.C. § 103(a) as unpatentable over U.S Patent No. 5,850,397 to Raab et al. ("Raab") in view of U.S. Patent No. 6,105,165 to Rao et al. ("Rao") and further in view of U.S. Patent No 6,442,144 to Hansen et al. ("Hansen").

The Raab *Patent*

Raab describes a method for determining the topology of a mixed-media network. The method divides the network into "spheres" containing devices using the same topology mechanism, such as Ethernet devices. The method methodically identifies all boundary devices

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within a sphere, then identifies other spheres that include those boundary devices. In that way, all spheres in the global network are discovered and eventually processed. Information about each sphere is gathered from a "sphere agent," which collects topology information about the sphere. Each sphere must have a sphere agent (Raab, col. 5, lines 32-42).

Other than gathering topology information from the sphere agents, Raab discloses no particular technique for gleaning connection information from the spheres. As admitted by the Examiner, Raab does not disclose the claimed steps of retrieving and storing and IP address, a subnet mask and a virtual circuit identifier from each ATM interface, and does not disclose using that IP address in conjunction with that subnet mask to derive a destination IP address, thereby identifying a pair of network IP addresses. The Examiner further notes that Raab does not disclose identifying a virtual circuit identifier value associated with each of the pair of network IP addresses, and does not disclose the steps of retrieving and preparing WAN configuration data so as to permit a LAN-to-WAN correlation, and retrieving and storing the associated configuration information and components of the WAN along with the entries of the list.

As the Examiner notes, Raab does not disclose identifying a single connection, but instead discloses mapping all connections in an entire network.

Raab suggests modifying the described system to determine the topology of multiple, particular LANs connected to a global network. Raab's proposed solution is simply to ignore those LANs that are not of interest, and proceed with the same "crawling" technique, relying on the sphere agents for network information about each sphere.

The Rao *Patent*

Rao is directed to a method of monitoring calls between nodes within a connection-oriented network. Those calls may be very transient and dynamic, presenting unique monitoring challenges (Rao, col. 1, lines 49-52). The method described in Rao addresses those problems by determining call status at specific time instances, and graphically representing a comparison of that status (Rao, col. 2, lines 8-16). In that way, a snapshot is provided of calls existing on the network at a given moment (Rao, col. 7, lines 22-26).

Rao is <u>not</u> directed to the discovery of network topology. Network information is instead gathered in local management information base (MIB) tables by network management agents and made available to the Rao system (Rao, col. 45, lines 27-41). Rao compares that information with information about each call in order to create the graphical status representations to which the disclosure is directed (Rao, col. 8, line 48 – col. 9, line 40). No technique for the discovery of network topology is taught or suggested by Rao.

The Hansen *Patent*

Hansen describes a technique for discovering, identifying and graphically representing network devices in a hybrid network. The technique discovers devices by reading routing tables and other IP address tables from devices in the network. Hansen discloses deriving "network numbers" from IP address/mask pairs (Hansen, col. 6, lines 7-10). Hansen does not disclose deriving IP addresses from local IP addresses and mask numbers, as disclosed and claimed in the present application. Instead, <u>known</u> IP addresses are used to identify a common network number.

In an exemplary network configuration, Hansen shows network sites in various cities, states, campuses and floors (Hansen, col. 6, lines 54-62). That disclosure in no way teaches or suggests the use of the city and state data in associating interfaces on LANs with those on a WAN, as described and claimed in the present application.

Discussion

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. § 2143. Applicant respectfully asserts that at least the first and third criteria have not been met by the Examiner in the present case, and that all the claims as presented are patentable over the art cited by the Examiner.

No Teaching or Suggestion to Combine the References

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. 'The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in

the art.' " M.P.E.P. § 2143.01 (quoting *In re Kotzab,* 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)).

The Examiner combines Raab, Rao and Hansen in his rejection of the independent claims. Raab is directed to a method for determining the topology; Rao is directed to real-time monitoring of calls between nodes. There is no suggestion is either reference, or in any art of which applicant is aware, to utilize elements from the call-state-monitoring system of Rao in the network topology determination method of Raab.

The problems to which those references are directed are very different. In Raab, the overall topology of a network is determined, regardless of individual call states, or even whether a call is going on. In contrast, Rao is directed to the specific issue of monitoring individual call states as those calls are occurring. One skilled in the art would not look to the Rao call-state-monitoring system to solve problems encountered in network topology discovery.

Furthermore, in Raab, stable sphere topologies are collected; in Rao, transient calls are monitored as they appear and disappear between nodes. No methodical topology discovery is carried out in Rao; indeed, there is no time for such analysis (*see* Rao, col. 1, lines 41-55). Instead, in Rao, topology is simply imported from MIB gathering engines.

Because nowhere in the art is there any suggestion to combine Rao's real-time call-state-monitoring techniques with the topology discovery methods of Raab, applicant respectfully submits that the Examiner has failed to make a *prima facie* case of obviousness, and that the claims of the present application are therefore patentable over the cited art.

<u>All Claim Limitations Not Taught or Suggested in the Prior Art</u>

To establish *prima facie* obviousness of a claimed invention, each and every claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Applicant respectfully asserts that each limitation in the independent claims of the present case is not taught or suggested by the prior art. For example, each of the independent claims 1, 7 and 13 of the present application require deriving a destination IP address using the IP address and subnet mask for each ATM interface. That unique feature of the present invention allows intelligent matching of LANs connected through the ATM network, without relying on an external database maintained for that purpose. The Examiner admits that neither Raab nor Rao discloses that limitation, but cites Hansen (Hansen, col. 1, lines 26-39) for disclosing the "use [of] an IP address in conjunction with the subnet mask to derive a destination IP address" (Office Action, page 6). Applicant respectfully submits that Hansen does not disclose deriving a destination IP address. Instead, Hansen at most discloses the derivation of "network numbers" using pairs of IP addresses and masks <u>that are already known</u>. No IP address is therefore derived in any of the art cited by the Examiner.

Applicant further respectfully asserts that nowhere in the cited art is it disclosed to associate city and state values of the ATM interfaces on the LANs with city and state values on the WAN, as required by independent claims 1, 7 and 13. Again, the Examiner admits that that limitation is not disclosed by Raab or Rao, but asserts that it is disclosed by Hansen (at Fig. 5; col. 6, lines 54-62). Hansen, however, simply discloses displaying city and state information as

part of the graphical representation to which Hansen is directed. Hansen does not disclose

associating city and state data of ATM interfaces on LANs with similar data on a WAN. In fact,

Hansen does not utilize the city and state data for anything beyond its display in the graphical

representation.

For the additional reason that at least two of the claim limitations of the independent

claims are not taught or suggested by the prior art, applicant respectfully submits that the

Examiner has not established a *prima facie* case of obviousness in the present case.
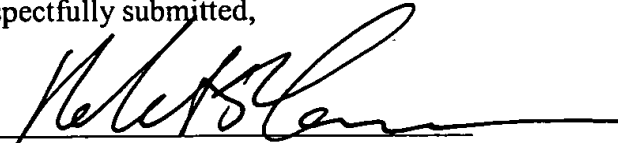

Conclusion

Applicants therefore submit that none of the claims presented in the case are taught or

suggested by the cited art. For the reasons stated above, the limitations of independent claims 1,

7 and 13 are neither taught nor suggested by Raab in view of Rao and further in view of Hansen,

and there is no teaching or suggestion in the art of record or elsewhere to make that combination.

The dependent claims are patentable for at least those same reasons because they incorporate all

the limitations of the independent claims. Applicants therefore assert that claims in the case are

now in condition for allowance, and earnestly request that the Examiner issue a timely Notice of

Allowance.

Should the Examiner have any questions regarding the present case, the Examiner

should not hesitate to contact the undersigned at the number provided below.

Respectfully submitted,

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